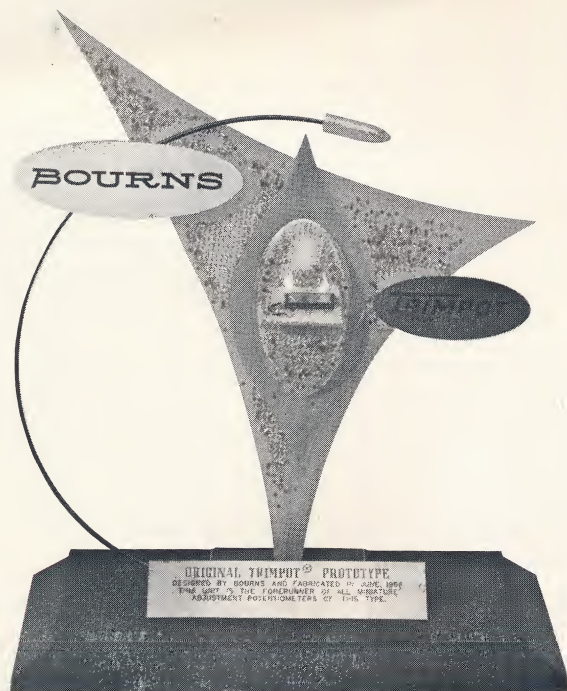


TRIMMING POTENTIOMETERS
PRECISION POTENTIOMETERS AND CONTROLS
RESISTOR NETWORKS



6 SHORT FORM CATALOG **TP-1**



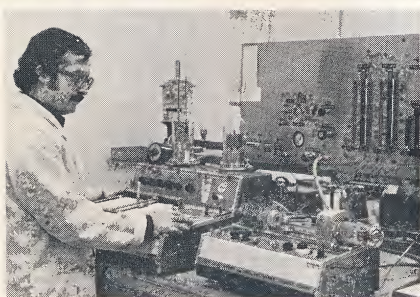


TRIMPOT PRODUCTS DIVISION

ABOUT THE COMPANY

In 1952 Marlan E. Bourns, founder of Bourns, Inc., introduced the first miniature Trimpot® leadscrew actuated potentiometer at the ISA Show in Cleveland, Ohio. This introduction launched a whole new industry, of which Bourns is the acknowledged leader. From its leadership position in trimming potentiometers, the Trimpot Products Division has expanded into precision potentiometers, low cost panel controls and thick-film resistor networks.

Today, Bourns is a worldwide company... manufacturing and marketing a variety of resistive components, magnetic components, life systems, transducers, management systems, integrated monolithic circuits, reconnaissance cameras and optical components.



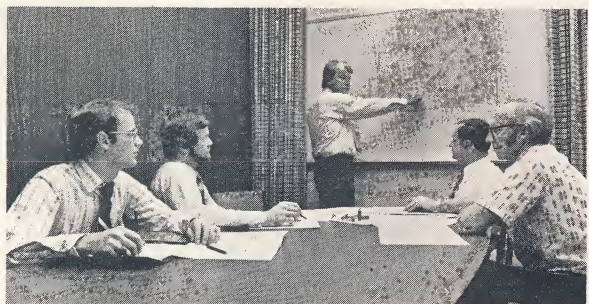
LEADERSHIP BY DESIGN

Bourns maintains extensive design engineering and materials research organizations, continuously probing the leading edges of the State of the Art in resistive component technology. Many industry firsts in technique and design have been contributed by Bourns... in trimmers, precision potentiometers, controls and thick-film networks.



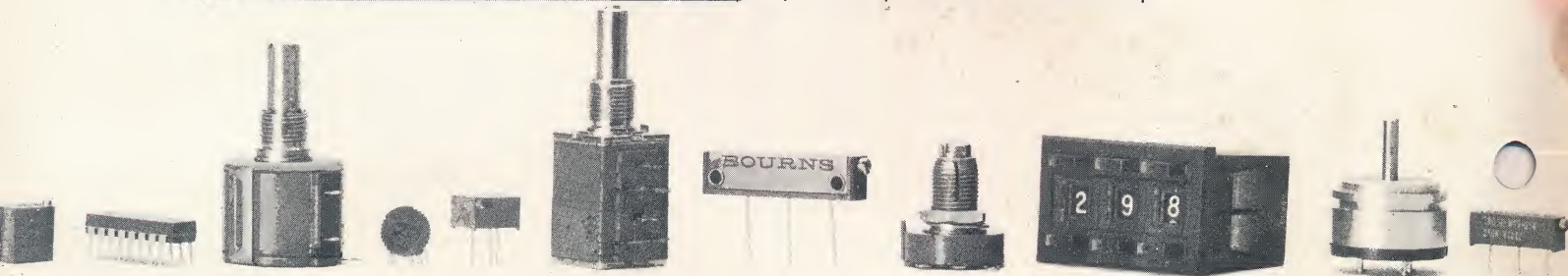
QUALITY IS SERIOUS BUSINESS

And no one takes it more seriously than Bourns. We continuously maintain one of the best overall quality records in the industry. Our reject rates are among the lowest... if not *the* lowest. Most importantly, when problems do occur (and they occasionally will... even to the best of us) Bourns *main concern* is keeping your production lines moving. We satisfy *your* needs first... and ascertain the culprit second.



SERVICE AND SUPPORT

Bourns maintains a large staff of experienced application engineers to assist you with specific design-in problems or special applications. Each product line has a separate team, to enable specialization of application skills. Additionally, product design engineers are assigned to provide special technical back-up.



Apr 79



ADVANCED ORDER-PROCESSING AND CONTROL SYSTEM

Bourns maintains the best customer service and order expediting organization in the variable resistive components industry. This organization is supported by an advanced on-line computer system, with inquiry terminals at the fingertips of all customer service and order processing personnel . . . plus key order monitoring and production control stations. Both Telex™ and TWX services are provided for direct-wire communications.

Although unusual circumstances occasionally cause delays, our operating **standard** is a response in 24-hours or less to telephone and wire inquiries.



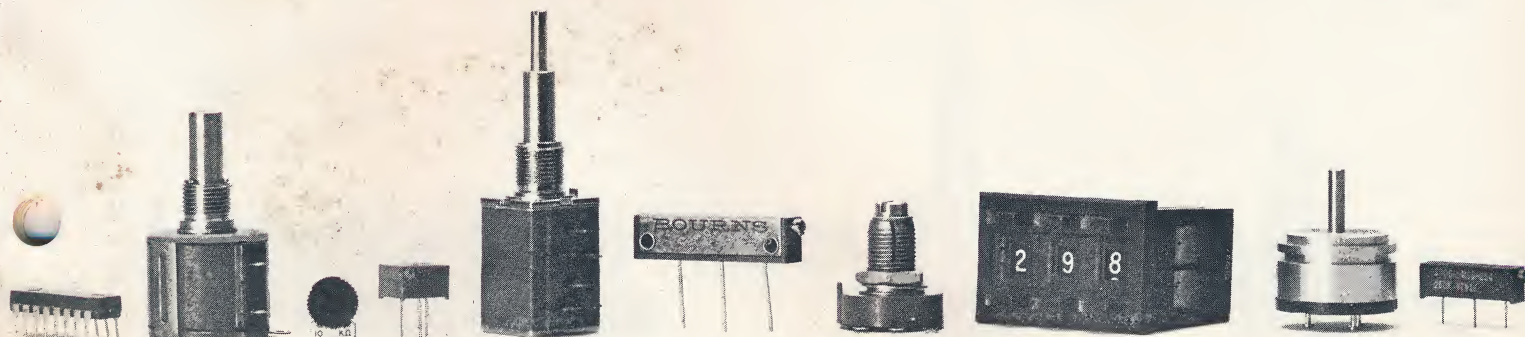
AUTOMATED STOCK CONTROL

To complement our on-line computer order processing system, an automated order-picking system is used to expedite the delivery of small-to-medium sized orders from our large factory stock of standard part numbers. Order and shipping instructions for off-the-shelf orders are transmitted directly to the packing and shipping area by the computer so that most are "out-the-door" within 24 hours.



LOCAL INVENTORIES NEAR YOU

Most of the components listed in this catalogue are available off-the-shelf from a Bourns Distributor location near you. Nearly a hundred such local inventories — throughout the US and Canada — assure you of ready availability of standard items at competitive prices . . . backed by Bourns traditional quality and reliability.



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PRECISION POTENTIOMETERS

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 USA/EUROPE/MIDDLE EAST/CANADA/
 FAR EAST/LATIN AMERICA

THE FIRST COMPLETE POTENTIOMETER HANDBOOK

Now . . . a comprehensive handbook of practical, how-to information on the theory, history, construction, design, application and selection of potentiometers and trimmers. The major portion of the text is written for systems and circuit designers, components engineers and technicians. Available from the McGraw-Hill Book Company, 1221 Avenue of the Americas, New York, N.Y. 10020. Price: \$14.50.

TRIMMING POTENTIOMETER SELECTION GUIDE INDEX

For details on specific models look under the applicable element type, size and find model and page number.

RECTANGULAR MULTI-TURN

	Length	Commercial Model	Industrial Model	Mil-Spec Model	Page
WIREWOUND	1 1/4"	271/3/5	200		5
			260		5
			3057	RT12, RTR12	5/7
	1"	3067	3070		5
			220	RT10	5/7
CERMET	3/4"	3005			5
	1 1/4"		3059	RJ12, RJR12	6/7
	3/4"	3006	3099(DIP)	RJR32	6
		3009			6/7
		3069			6
CARBON	1/2"		3082	RJR28	6/7
	1 1/4"	272/4/6			6

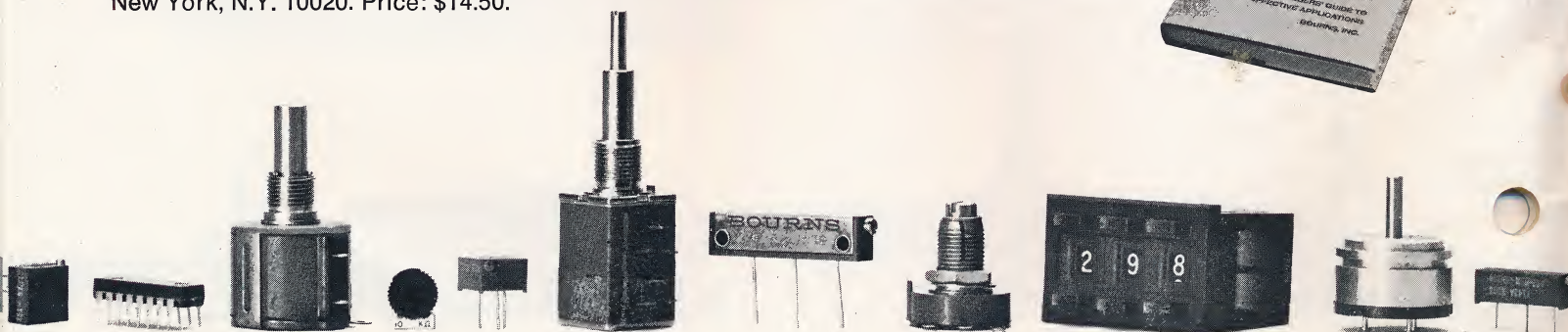
SQUARE MULTI-TURN

WIREWOUND	1/2"	3255	3250	RT22, RTR22	5/7
	3/8"		3280		5
			3290	RT24, RTR24	5/7
	1/4"		3260	RT26	5
CERMET	1/2"		3252	RJ22	6/7
	3/8"	3299	3282, 3292	RJ24, RJR24	6/7
	1/4"		3262	RJ26, RJH26	6/7

SINGLE-TURN

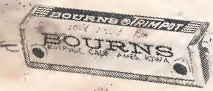
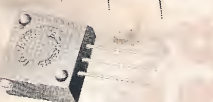
WIREWOUND	1/2"	3345			5
	5/16"	3305	3300		5
CERMET	1/2"		3359		6
	3/8"	3386	3352		6
	5/16"		3339†		6
	1/4"	3326, 3329		RJ50	6/7
CARBON	1/2"	3353			6

† 4 Turn Adjustment



WIREWOUND TRIMMING POTENTIOMETERS

Choose wirewound units for high power, stability and low temperature coefficient.

	Description	Dimensions H x W x L	Termi- nals	Res. Tol. (%)	Power (Watt) at 70°C	Max. Temp. °C	Nom. Adj. Turns	Humidity Mil Spec	Standard Resistances Ω
	200 Low Cost TRIMPOT Potentiometer	.32x.28x1.25	L,S,P	±10	0.5	105	25	Steady State	10-100K
	220 High Temperature (RT 10)	.32x.18x1.00	L,W,P	±5	1.0	175	15	Yes	10-30K
	260 High Temperature	.32x.28x1.25	L,S,P	±10	1.0	175	25	Steady State	10-100K
	271 273 275 Commercial TRIMIT Potentiometer	.32x.28x1.25	L S P	±10	0.50 at 70°C	105	25	Steady State	10-50K
	3005 Sealed Commercial E-Z-TRIM Potentiometer	.31x.17x.75	P	±10	1.0 at 40°C	125	20	Steady State	10-25K
	3057 High Temperature Humidity Proof (RTR 12 level M, P) (RT 12)	.32x.19x1.25	L,P,Y,J	±5	1.0	150	22	Yes	10-100K
	3067 Commercial E-Z-TRIM Potentiometer	.35x.28x1.00	S,P	±10	0.5 at 25°C	85	15	No	50-20K
	*3070 High Power Fine Resolution	.31x.31x1.06 .36x.31x1.06	L,S,H P	±5	1.5	175	10	Yes	100-50K
	3250 Humidity Proof High Temperature (RT 22)	.19x.50x.50 .22x.50x.50	L P,W W66	±5	1.0	175	25	Yes	10-50K
	3255 Commercial TRIMPOT Potentiometer	.19x.50x.50 .22x.50x.50	L P,W	±5	1.0 at 50°C	150	25	Steady State	10-50K
	3260 Humidity Proof High Temperature (RT 26)	.25x.25x.17	H,W	±5	0.2	175	11	Yes	10-25K
	3280 Humidity Proof High Temperature	.203x.375x.375	L,P,W W66	±5	1.0	175	25	Yes	10-50K *
	3290 Humidity Proof High Temperature (RT 24)	.150x.375x.375	L,W,H P	±5	1.0	175	25	Yes	10-50K
	3300 Humidity Proof Single-Turn High Temperature	.37x.25x.31 .31 dia.x.18 .31 dia.X.46	W P S	±5	0.5	175	300°	Yes	10-25K
	3305 Sealed Commercial TRIMIT Potentiometer	.31x.25x.375 .31 dia.x.19	W P	±5	0.5 at 70°C	125	280°	Steady State	10-25K
	3345 Industrial TRIMPOT Potentiometer	.45 dia.x.25 .45x.32x.57	P W	±5	1.0	150	1	Yes	10-50K

PRODUCT PHOTOGRAPHS ARE APPROXIMATELY THREE QUARTERS ACTUAL SIZE

*NOT STOCKED BY DISTRIBUTORS

CERMET TRIMMING POTENTIOMETERS

Choose cermet units for good adjustability, stability, broad resistance range and good high frequency performance.

	Description	Dimensions H x W x L	Terminals	Res. Tol. (%)	Power (Watt) at 70°C	Max. Temp. °C	Nom. Adj. Turns	Humidity Mil Spec	Standard Resistances Ω
	3006 Commercial TRIMPOT Potentiometer	.25x.19x.75	P,W,Y	±10	0.75	125	15	Yes	10-2 Meg
	3009 Commercial E-Z-TRIM Potentiometer	.35x.19x.75	P,Y	±10	0.75 at 25°C	125	20	Yes	10-2 Meg
	3059 High Temperature Humidity Proof (RJ 12)	.32x".19x1.25	L,P,Y,J	±10	1.0	150	22	Yes	10-2 Meg
	3069 Commercial E-Z-TRIM Potentiometer	.35x.25x.75	P	±10	0.75 at 25°C	125	20	Yes	10-2 Meg
	3082 Humidity Proof Cermet	.10x.15x.50	P	±10	0.3 at 85°C	150	10	Yes	10-2 Meg
	3099 Dual In-Line Package	.25x.19x.75	P	±10	1.0	150	20	Yes	10-2 Meg
	3252 High Performance Humidity Proof (RJ 22)	.50x.50x.22	L,P,W,X	±10	1.0	150	23	Yes	10-2 Meg
	3262 Humidity Proof High Temperature (RJ 26)	.27x.17x.25	P,W,X	±10	0.25 at 85°C	175	12	Yes	10-1 Meg
	3282 Humidity Proof Cermet	.20x.375x.375	L,P,W,H	±10	0.5 at 85°C	175	25	Yes	10-1 Meg
	3292 Thin Line Cermet (RJ 24)	.15x.375x.375	L,P,W,X	±10	0.5 at 85°C	175	22	Yes	10-1 Meg
	3299 Commercial TRIMPOT Potentiometer	.39x.37x.25	P,W,X	±10	0.5	125	25	Yes	100-1 Meg
	3326 High Performance Cermet	.250 dia.x.140	P,H	±10	0.5 at 85°C	150	240°	Yes	10-1 Meg
	3329 High Performance Cermet	.250 dia.x.180 .245x.29x.375	P,H W	±10	0.5 at 85°C	150	240°	Yes	10-1 Meg 10-1 Meg
	3339 Four-Turn Adjustment	.300 dia.x.25	P,H,W	±10	0.5 at 85°C	150	4	Yes	10-1 Meg
	3352 Commercial Single-Turn	.415x.365x.145	T,E,P, W,H,V	±20	0.75 at 40°C	125	230°	Yes	10-5 Meg
	3359 Commercial	7/16" dia.	P,W	±20	0.5	125	270°	No	100-2 Meg
	3386 Commercial	.375x.375x.19	F,P,R,K W,S,H	±10	0.5 at 85°C	125	280°	Yes	10-2 Meg

RESISTON® CARBON TRIMMING POTENTIOMETERS

	272 274 276 Commercial TRIMIT RESISTALOY Element Potentiometer	.32x.28x1.25	L S P	±20	0.20 at 25°C	105	25	No	5K-5 Meg
	3353 Carbon Element	1 1/32" dia.	P,W	±20	1/3	100	300°	No	500-5 Meg

MIL-SPEC TRIMMERS

MIL-R-27208



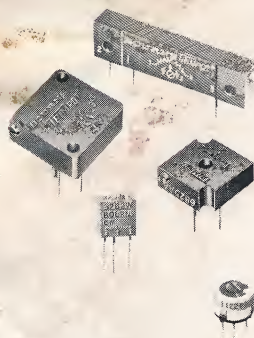
Qualified Styles	Qualified Terminals	Characteristics	Qualified Resistances Ω
RT10	L,P	C2	100 Ω -10K
RT12	L,P,Y	C2	10 Ω -10K 20K
RT22	L	C2	50 Ω -10K 20K
	P,W,X	C2	50 Ω -10K 20K
RT24	L,P,W,X	C2	10 Ω -10K
RT26	W,X	C2	10 Ω -1K 2K-5K

MIL-R-39015



RTR12	L,P,Y	D	10 Ω -10K 20K
RTR22	L,P,W,X	D	500 Ω -10K 20K
RTR24	P,W,X	D	500 Ω -10K

MIL-R-22097



RJ12	L,P,Y	C	10 Ω -1 Meg.
RJ22	L,P,W,X	F,C	10 Ω -1 Meg.
RJ24	L,P,W,X	C	10 Ω -1 Meg.
RJ26	P,W,X	F,C	10 Ω -1 Meg.
RJ50	P	C	10 Ω -1 Meg.

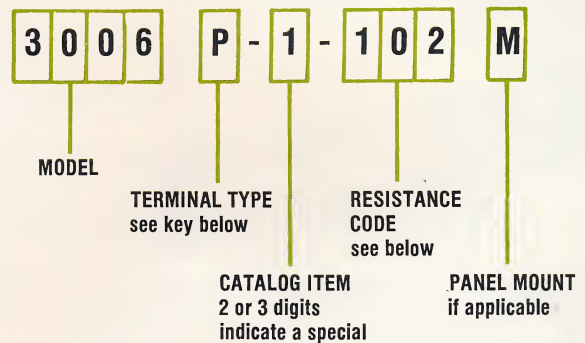
MIL-R-39035



RJR12	L,Y	C,F	10 Ω -1 Meg.
RJR24	P,W,X	C,F	200 Ω - 1 Meg.
RJR26	P,W,X	C,F	10 Ω -1 Meg.
RJR28	P	C,F	10 Ω -2 Meg.
RJR32	D	C,F	10 Ω -2 Meg.

PRODUCT PHOTOGRAPHS ARE APPROXIMATELY THREE QUARTERS ACTUAL SIZE

TRIMMING POTENTIOMETER PART NUMBERING SYSTEM



KEY TO TERMINAL TYPES

J	— J Hook Solder Lugs
L	— Insulated Stranded Leads
S	— Solder Lugs
P,T,Y	— Printed Circuit Pins (flat mounting)
H	— Printed Circuit Pins (see individual model catalog sheet for details)
W	— Printed Circuit Pins (edge mounting)
W-66 or X	— Printed Circuit Pins (edge mounting, side adjustment for worm gear units only)

Model 3386 only:

H,S,W	— Printed Circuit Pins (edge mounting)
P,R,T,K*,F*	— Printed Circuit Pins (flat mounting)*
D	— Printed Circuit Pins (DIP socket spacing)

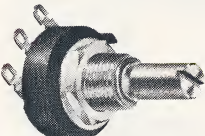
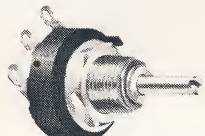
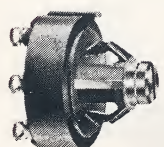
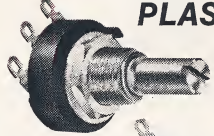
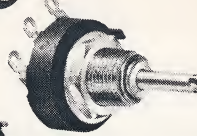
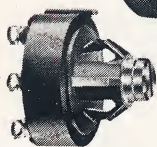
NOTE All models except 3352, 3353, 3359 are sealed against sand and dust.

RESISTANCES

The following values are standard if they fall within limits listed for individual models. Other resistances available on special order.

WIREWOUND	CERMET	CARBON	CODE
50	10		100
20	20		200
50	50		500
100	100		101
200	200		201
500	500		501
1K	1K		102
2K	2K		202
5K	5K	5K	502
10K	10K	10K	103
20K	20K	20K	203
50K	50K	50K	503
100K	100K	100K	104
	200K	200K	204
	500K	500K	504
	1 Meg.	1 Meg.	105
	2 Meg.		205
	5 Meg.		505

CONTROLS

	MODEL	DESCRIPTION	SIGNIFICANT SPECIFICATIONS
CERMET   	3852A	3/8" Bushing	3/4" DIAMETER Housing Length 1/4" Standard Resistance Range: (Tapers A and H) 50 to 5,000,000 ohms (Tapers C and F) 1,000 to 2,500,000 ohms Resistance Tolerance ±10% standard Theoretical Electrical Travel (3852 & 3859) 240° ±10° Mechanical Angle (3852 & 3859) 280° ±5° (3856 No stops) 1350° ±50° Continuity Maintained for full mechanical angle Max. Contact Resistance Variation ±3% of total resistance Power Rating at 70°C: (Tapers A and H) 2 watts (Tapers C and F) 1 watt Operating Temperature Range -65° to +150°C (3852 & 3856) -65° (3859) -65° Temperature Coefficient 5m/°C Rotational Life vcle:
	3852B	3/8" Locking Bushing	
	3852C	1/4" Bushing	
	3852E	1/4" Locking Bushing	
	3856A	3/8" Bushing 1/4" Shaft Dia.	
	3856H	3/8" Bushing 1/8" Shaft Dia.	
	3859A	3/8" Plastic Bushing	
	3859B	Plastic Snap-in Bushing	
	3851A	3/8" Bushing	
	3851B	3/8" Locking Bushing	
CONDUCTIVE PLASTIC   	3851C	1/4" Bushing	3/4" DIAMETER Housing Length Standard Resistance Range: (Tapers B and E) 1,000 to 100,000 ohms (Tapers D and G) 2,000 to 50,000 ohms Resistance Tolerance ±20% standard Theoretical Electrical Travel (3851 & 3858) 240° ±10° Mechanical Angle (3851 & 3858) 280° ±5° Continuity Maintained for full mechanical angle Max. Contact Resistance Variation ±1% of total resistance Power Rating at 70°C: (Tapers B and E) 1 watt (Tapers D and G) 0.5 watt Operating Temperature Range -65° to +125°C Temperature Coefficient ±1,000 ppm/°C Rotational Life 100,000 cycles
	3851E	1/4" Locking Bushing	
	3853A	3/8" Plastic Bushing	
	3853B	3/8" Plastic Snap-in Bushing	
	3862C	1/4" Bushing	
	3862E	1/4" Locking Bushing	
CERMET 	RVC6N	1/4" Diameter Non-Locking Bushing	1/2" DIAMETER Housing Length453" ±.016 Standard Resistance Range: (Tapers A and H) 100 to 5,000,000 ohms (Tapers C and F) 500 to 2,500,000 ohms Resistance Tolerance ±10% standard Theoretical Electrical Travel 260° ±10° Mechanical Angle 295° ±3° Max. Contact Resistance Variation ±3% of total resistance Power Rating at 125°C: (Tapers A and H) 1 watt (Tapers C and F) 0.5 watt Operating Temperature Range -65° to +175°C Temperature Coefficient ±150 ppm/°C Standard Resistance Range 1,000 ohms to 5,000,000 ohms Resistance Tolerance ±10% standard Power Rating 1/2 watt at +125°C Operating Temperature Range -65°C to +175°C
	RVC6L	1/4" Diameter Locking Bushing	

PRODUCT PHOTOGRAPHS ARE APPROXIMATELY THREE QUARTERS ACTUAL SIZE

FOR STYLES OTHER THAN THOSE ILLUSTRATED, SEE MODEL DESCRIPTIONS ABOVE.

CONTROLS PART NUMBERING SYSTEM AND ORDERING

The models with features indicated by the shaded areas are normally stocked by Bourns distributors or the factory for immediate delivery. Unshaded areas are available on special order and are not normally stocked.

MODEL NUMBER AND DIAMETER

3 8 5 2

3851 3/8" DIA.
3852 1/2" DIA.

3858 3/8" DIA.
3859 1/2" DIA.

BUSHING STYLE AND SIZE

A Plain 3/8" DIA.
B Locking 3/8" DIA.
C Plain 1/2" DIA.
E Locking 1/2" DIA.

A Plain 3/8" DIA.
B Snap-in 1/2" DIA.

SHAFT LENGTH FMS AND DIAMETER

16 1/8" Dia.
28 1/8" Dia.
64 1/8" Dia.

20 1/4" Dia.
12 1/8" Dia.
28 1/8" Dia.

28 1/8" Dia.
28 1/4" Dia.

16 1/8" Dia.
28 1/8" Dia.
64 1/8" Dia.

12 1/8" Dia.
28 1/4" Dia.

TERMINAL STYLE AND SHAFT END

1 Lugs, Plain
2 Lugs, Slotted
3 Lugs, Flatted
5 Printed Circuit, Plain
6 Printed Circuit, Slotted
7 Printed Circuit, Flatted

RESISTANCE CODE

500	102
101	252
251	502
501	103
102	253
252	503
502	104
103	254
253	504
503	105
104	255
254	505
504	
105	
255	
505	

TAPER AND RESISTANCE TOLERANCE

A Linear, ±10% Cermet
B Linear, ±20%
C 10% Audio CW, ±10%
D 10% Audio, CW, ±20%
E Linear, ±10%
F 10% Audio, CCW, ±10%
G 10% Audio, CCW, ±20%
H Linear, ±5%

CONDUCTIVE PLASTIC RESISTANCE RANGE AND TAPERS

NOTES

- Other bushing styles are available, consult factory for details.
- The shaft length numbering code is based on the number of 1/2" increments in the length from the mounting surface (FMS), thus a 7/8" shaft length is ordered as a "28". Shaft lengths other than those listed above are available in 1/4" increments up to 2". Minimum order quantities may be required.
- This is the minimum length slotted shaft available for each model bushing combination as shown. Plain or flatted shafts are longer in order to accommodate the fastening of knobs or other accessories.
- Plain or flatted shafts are not available with locking bushing (B,E). For 1/4" diameter shafts, flats extend to within 1/8" of bushing with a 3/8" long flat maximum. For 1/2" diameter shafts, flats extend to within 1/4" of bushing with a 1/2" long flat maximum.
- Other nominal resistances are available, including those listed below. Consult factory for details.

Code	Ohms	Code	Ohms	Code	Ohms	Code	Ohms	Code	Ohms
151	150	152	1.5K	153	15K	154	150K	155	1.5 Meg
201	200	202	2.0K	203	20K	204	200K	205	2.0 Meg
351	350	352	3.5K	353	35K	354	350K	355	3.5 Meg
751	750	752	7.5K	753	75K	754	750K		

6. The resistance ranges available for tapers C & F are 1000 to 2,500,000 ohms, except Model 3862 is limited to: 500 to 2,500,000 ohms.

MOUNTING HARDWARE

Part No. and Description	Model 3851A/B 3852A/B	Model 3851C/E 3852C/E	Model 3858A 3859A	Model 3862C 3862E	Model RV6N RV6L	Model RVCSN/L RVCS6/T
H-36-1 Flat Washer		X		X	X	X
H-36-2 Flat Washer	X		X			
H-37-1 Lock Washer		X		X	X	X
H-37-2 Lock Washer	X		X			
H-38-1 Mounting Nut		X		X	X	X
H-38-2 Mounting Nut	X		X			
H-38-3 Lock Nut		3851E and 3852E Only		3862E Only	RV6L Only	RVCSL and RVCS6 Only
H-38-4 Lock Nut	3851B and 3852B Only					
H-39 Adapter	X		X			
H-40-1 Panel "O" Ring		X				
H-40-2 Panel "O" Ring				X		X

NOTE: Hardware indicated by shaded areas is normally supplied with unit. Other hardware, such as flat washers, "O" rings and adapters may be ordered separately.

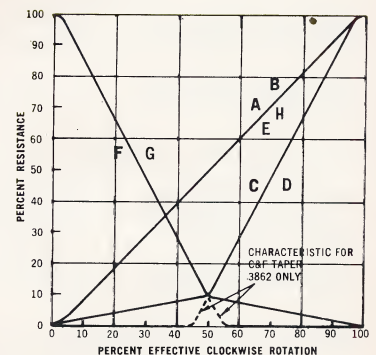
RESISTANCE TAPER

CERMET

- A — Linear Taper, ±10% Resistance Tolerance
- C — Clockwise (10%) Audio Taper, ±10% Resistance Tolerance
- F — Counterclockwise (10%) Audio Taper, ±10% Resistance Tolerance
- H — Linear Taper, ±5% Resistance Tolerance

CONDUCTIVE PLASTIC

- B — Linear Taper, ±20% Resistance Tolerance
- D — Clockwise (10%) Audio Taper, ±20% Resistance Tolerance
- G — Counterclockwise (10%) Audio Taper, ±20% Resistance Tolerance
- E — Linear Taper ±10% Resistance Tolerance



MODEL 80 BUILDING-BLOCK POTENTIOMETER

SINGLE OR MULTIPLE $\frac{5}{8}$ " SQUARE SECTIONS

BUSHING MOUNT

CERMET AND/OR CONDUCTIVE PLASTIC ELEMENTS

DESCRIPTION	MODEL
81A1A/82A1A	$\frac{3}{8}$ " Plain Bushing 1 Sec. — PC/Lugs
81C1A/82C1A	$\frac{1}{4}$ " Plain Bushing 1 Sec. — PC/Lugs
81B1A/82B1A	$\frac{3}{8}$ " Locking Bushing 1 Sec. — PC/Lugs
81E1A/82E1A	$\frac{1}{4}$ " Locking Bushing 1 Sec. — PC/Lugs
81A2A/82A2A	$\frac{3}{8}$ " Plain Bushing 2 Sec. — PC/Lugs
81C2A/82C2A	$\frac{1}{4}$ " Plain Bushing 2 Sec. — PC/Lugs
81B2A/82B2A	$\frac{3}{8}$ " Locking Bushing 2 Sec. — PC/Lugs
81E2A/82E2A	$\frac{1}{4}$ " Locking Bushing 2 Sec. — PC/Lugs
81A3A/82A3A	$\frac{3}{8}$ " Plain Bushing 3 Sec. — PC/Lugs
81C3A/82C3A	$\frac{1}{4}$ " Plain Bushing 3 Sec. — PC/Lugs
81B3A/82B3A	$\frac{3}{8}$ " Locking Bushing 3 Sec. — PC/Lugs
81E3A/82E3A	$\frac{1}{4}$ " Locking Bushing 3 Sec. — PC/Lugs
81A4A/82A4A	$\frac{3}{8}$ " Plain Bushing 4 Sec. — PC/Lugs
81C4A/82C4A	$\frac{1}{4}$ " Plain Bushing 4 Sec. — PC/Lugs
81B4A/82B4A	$\frac{3}{8}$ " Locking Bushing 4 Sec. — PC/Lugs
81E4A/82E4A	$\frac{1}{4}$ " Locking Bushing 4 Sec. — PC/Lugs

NOTE: See page 11 for complete part number, description of shaft, element type, taper and resistance value.

SIGNIFICANT SPECIFICATIONS

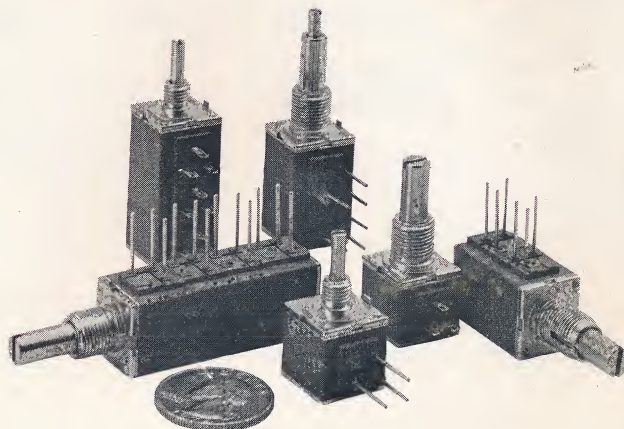
CONDUCTIVE PLASTIC

ELECTRICAL CHARACTERISTICS

Standard Resistance Range (Tapers B & E)	.250 to 5,000,000 ohms
(Tapers D & G)	1,000 to 2,500,000 ohms
Resistance Tolerance	±20% standard (B, D & G tapers) ±10% available (E tapers)
Independent Linearity	(B & E tapers) ±5%
Power Rating at 70°C	
Single Section	1 Watt
Multiple Section	.5 Watts/Section
Operating Temperature Range	-65° to +125°C
Temperature Coefficient	
Over Operating Temperature Range	±1,000 ppm/°C
Theoretical Electrical Travel	265° ±10°
Maximum Contact Resistance Variation	±1%
Total Mechanical Travel	300° ±5°
Rotational Life	100,000 Cycles
Maximum Total Resistance Shift	±10%
Moisture Resistance	
Maximum Total Resistance Shift	±10%
Shaft Torque	
Any Bushing, 1-4 Sections	0.3 to 2 oz.-in.

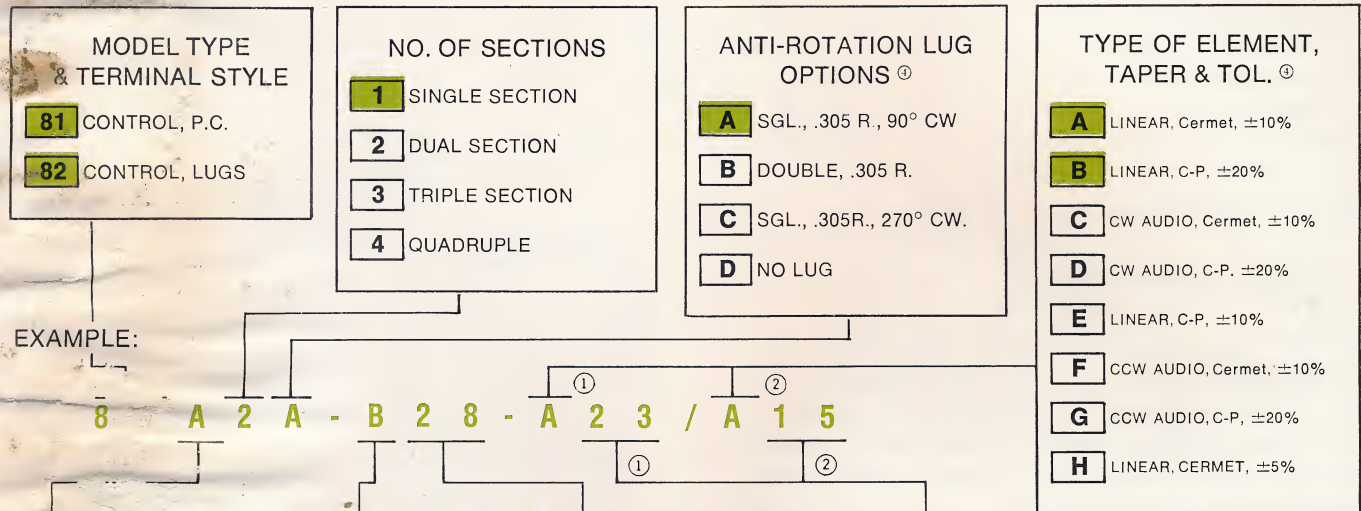
CERMET

Standard Resistance Range (Tapers A & H)	50 to 5,000,000 ohms
(Tapers C & F)	1,000 to 2,500,000 ohms
Resistance Tolerance	±10% standard (A, C and F tapers) ±5% Available (H taper)
Independent Linearity	(A & H tapers) ±5%
Power Rating at 70°C	
Single Section	2 Watts
Multiple Section	1 Watt/Section
Operating Temperature Range	-65° to +150°C
Temperature Coefficient	
Over Operating Temperature Range	±150 ppm/°C
Theoretical Electrical Travel	265° ±10°
Maximum Contact Resistance Variation	±1%
Total Mechanical Travel	300° ±5°
Rotational Life	100,000 Cycles
Maximum Total Resistance Shift	10 ohms or ±10%
Moisture Resistance	
Maximum Total Resistance Shift	±10%
Shaft Torque	
Any Bushing, 1-4 Sections	0.3 to 2 oz.-in.



MODEL 81/82 PART NUMBERING SYSTEM

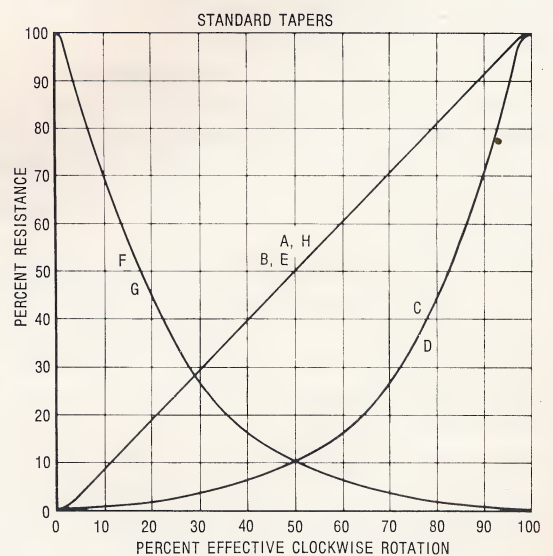
Features indicated by shaded areas are production standards and normally available for fast delivery. Unshaded areas are available on special order and are not normally stocked.



A Plain 3/8" D. x 3/8" L.	B Single, Slotted	16 1/4" D.
		20
		28
	G Dual Concentric, Slotted End	SEE NOTE 3 1/4" D. Outer 1/8" D. Inner
B Locking 3/8" D. x 1/2" L.	B Single, Slotted	20 1/4" D.
C Plain 1/4" D. x 1/4" L.	E Single, Slotted	12 1/8" D.
		20
		28
	K Dual Concentric, Slotted End	SEE NOTE 3 1/8" D. Outer 5/64" D. Inner
E Locking 1/4" D. x 1/2" L.	E Single, Slotted	20 1/8" D.

* 03 — 50	13 — 5K	23 — 500K
* 05 — 100	15 — 10K	25 — 1 Meg
07 — 250	17 — 25K	26 — 2.5 Meg
08 — 500	18 — 50K	27 — 5 Meg
10 — 1K	20 — 100K	
12 — 2.5K	22 — 250K	

* Available in Cermet only



TYPE, TAPER AND TOLERANCE

A — Cermet, Linear, ±10%	E — C-P, Linear, ±10%
B — C-P, Linear, ±20%	F — Cermet, CCW Audio, ±10%
C — Cermet, CW Audio, ±10%	G — C-P, CCW Audio, ±20%
D — C-P, CW Audio, ±20%	H — Cermet, Linear, ±5%

NOTES:

1. Taper and Resistance Code for 1st Section.
2. Taper and Resistance Code for 2nd Section.
3. Shaft length code is based on the number of 1/32" increments in the length from the mounting surface (FMS). Shaft lengths other than those listed are available on special order. Consult factory for dual concentric shafts.
4. Other anti-rotation lug options, resistance values, tapers and shaft end styles are available on special order. Consult factory for details.

SELECTION GUIDE

PRECISION POTENTIOMETERS

The characteristics involved in selection of a precision potentiometer are dependent on its application. Information is provided below to assist you in your selection.

MECHANICAL LIFE: Life expectancy of the element is based on an allowable change in total resistance of $\pm 5\%$. Element type and life expectancy in shaft revolutions are as follows:

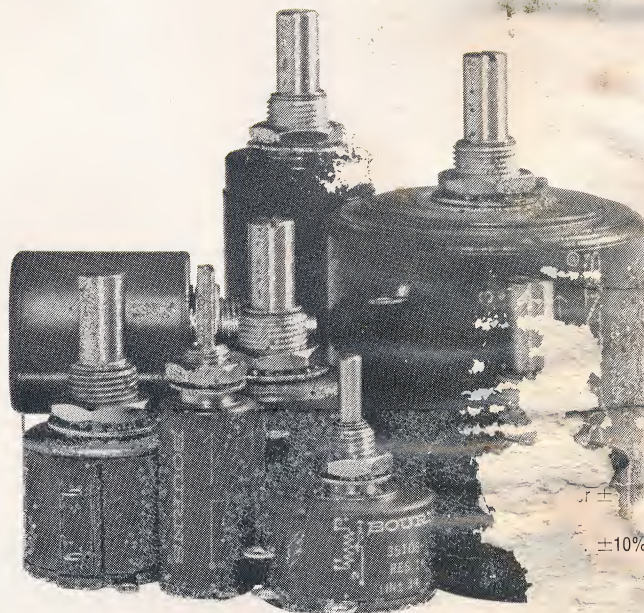
Wirewound	2,000,000	BI-FILM*	25,000,000
Conductive Plastic	25,000,000	HYBRID	5,000,000
Germet	5,000,000		

ELECTRICAL LIFE: Electrical life is measured in thousands of hours of useful service. For convenience, the usual test is 1,000 hours of OFF and ON operation at rated power. The power rating is based on the maximum recommended temperature and wattage dissipation over the entire element. Other factors, such as mechanical wear, combined effects of humidity, high and low ambient temperatures, mechanical shock and vibration, and unusual operating conditions may limit the normal life expectancy.

TEMPERATURE COEFFICIENT: Changes in temperatures also affect the total resistance of the element. This effect is measured in terms of change in resistance in parts per million per degree centigrade. Wire is inherently superior in this respect, with temperature coefficients of $\pm 20\text{ppm}/^\circ\text{C}$. Film elements have greater coefficients, ranging from $\pm 100\text{ppm}/^\circ\text{C}$ for BI-FILM and HYBRID elements to $\pm 400\text{ppm}/^\circ\text{C}$ for conductive plastic, with cermet having a coefficient of $\pm 200\text{ppm}/^\circ\text{C}$.

WIPER CURRENT: For satisfactory operation film type elements should at all times be used in the potentiometer mode, with a load resistance sufficiently high to make their inherent wiper contact resistance negligible. Wirewound elements are essentially free of wiper contact resistance and can operate satisfactorily at the level of wiper current allowed by the element resistance and power rating.

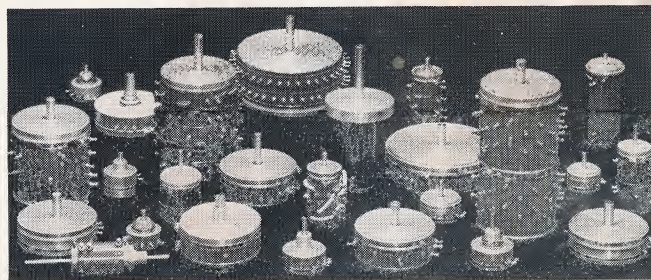
LOADING ERROR: Conformity to the desired function is affected by the resistance in the wiper circuit. This resistance acts in parallel with the element, causing a non-linear relationship between wiper position and output voltage. This characteristic, known as loading error, affects potentiometers of all element types. For a load ratio of 100:1, the loading error is .15%. For a load ratio of 10:1, the error would be 1.5%. Since all manufacturers test potentiometers for linearity or conformity, based on an essentially infinite wiper load, loading error must be taken into consideration to insure satisfactory operation. When necessary, load-compensated elements are available to overcome loading error.



CUSTOM PRECISION POTENTIOMETERS

Bourns also produces a wide variety of precision potentiometers for exacting applications in industrial and military markets. These models are specifically designed for extensive custom modifications to fit a broad range of unique applications. They include:

1. B-LINETM single-turn precision potentiometers with aluminum housing. Potentiometers in this series are in diameters of $\frac{7}{8}$ ", $1\frac{1}{16}$ " and 2", bushing or servo mount. Wirewound, conductive plastic and BI-FILM™ elements are available in each size — 18 standard models in all.
2. Single-turn precision potentiometers with plastic housing.
3. Servo-mount multi-turn potentiometers.
4. Non-linear function potentiometers, available in most models.



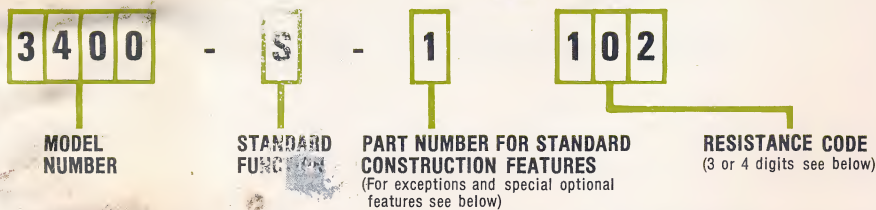
The B-LINE brochure is available from any Bourns sales office or the factory. Catalog sheets of all other models are available on request.

Ask for a copy of Bourns "Custom Precision Potentiometers" short form catalog. They're available from any Bourns Sales Office or the Factory.

*BI-FILM is a Bourns trademark for a low TC, long-life film element.

PART NUMBERING SYSTEM

STANDARD PRECISION POTENTIOMETERS



OPTIONAL FEATURES (Substitute for single digit part number)	PART NUMBER														STANDARD RESISTANCES (Refer to limits for each model)	
		3400	3500	3509	3510	3520	3540	3541	3543	3545	3700	3501	3507	3707	OHMS	CODE
High Torque Feature (2 to 8 oz.-in.)	16	X	X	X	X	X	X	X	X	X		X	X		10	100
TR Tolerance $\pm 1.0\%$	31	X		X	X	X	X		X	X	X		X	X	25	250
TR Tolerance $\pm 1.0\%$	32		X												50	500
TR Tolerance $\pm 5.0\%$	36							X				X			100	101
Linearity 1% Min. Res. 300 Ω	40	X		X	X	X	X				X		X	X	200	201
Linearity 1% Min. Res. 300 Ω	42		X												500	501
Linearity 1% Min. Res. 1K Ω	41	X													1,000	102
Linearity 1% Min. Res. 1K Ω	43		X												2,000	202
Linearity 1% Min. Res. 1K Ω	45				X	X					X	X		X	5,000	502
Linearity 1% Min. Res. 1K Ω	50											X			10,000	103
Linearity 1% Min. Res. 1K Ω	51	X			X	X	X		X	X	X		X	X	20,000	203
Linearity 1% Min. Res. 1K Ω	52		X	X											50,000	503
1/4" Bushing	70		X		X	X	X	X	X	X			X		100,000	104
1/4" Shaft, 3/8" Bushing	71				X										125,000	1253
Split Lock Bushing	72				X						X			X	150,000	154
Split Lock Bushing	77		X			X	X	X	X	X		X	X		200,000	204
7/8" Shaft Length Beyond Bushing	73	X	X	X	X	X	X	X	X	X	X	X	X	X	250,000	254
5/8" Shaft Length Beyond Bushing	74	X	X	X	X	X	X	X	X	X	X	X	X	X	500,000	504
3/4" Shaft Length Beyond Bushing	75	X	X	X	X	X	X	X	X	X	X	X	X	X	1,000,000	105
1" Shaft Length Beyond Bushing	76	X	X	X	X	X	X	X	X	X	X	X	X	X	2,000,000	205
Shaft Flat	80	X	X	X	X	X	X	X	X	X		X	X		5,000,000	505
Non-Turn Pin	90		X													
Non-Turn Pin	91				X	X	X	X	X	X		X				
2-Cup Assembly	135	X	X		X	X	X	X	X	X		X				

EXCEPTIONS TO STANDARD CONSTRUCTION 3507S-3-RC has slotted shaft. 3509S-8-RC has stainless steel shaft, aluminum bushing. 3509S-7-RC has stainless steel shaft, plastic bushing. 3509S-9-RC has plastic shaft, aluminum bushing.

SELECTION GUIDE CUSTOM PRECISION POTENTIOMETERS

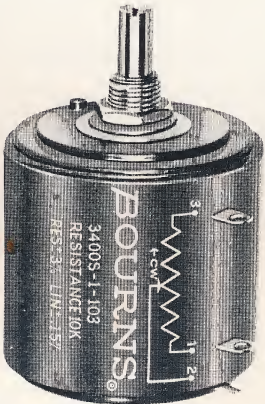
NUMBER OF TURNS	DIAMETER	WIREWOUND		NON-WIREWOUND			
				CONDUCTIVE PLASTIC		BI-FILM™	
		SERVO	BUSHING	SERVO	BUSHING	SERVO	BUSHING
1	7/8"	3580 (1) 3585 (1) 6530	3530 (1) 3535 (1) 6630	6538 3584 6534	6638 3534 6634	6533	6633
	1 1/8"	3485 (1) 6540	3435 (1) 6640	3484 6544	3434 6644	6543	6643
	2"	3465 (1) 6570	3415 (1) 6670	3464 6574	3414 6674	6573	6673
	3"	3495	3445				
3	7/8"	3560	3560S-93	3561	3561S-93		
5	7/8"	3570	3570S-93	3571	3571S-93		
10	1 1/2"	3750		3751			
	7/8"	3550	3550S-93	3551	3551S-93		
	2"	3450	3450S-93	3451	3451S-93		

(1) QPL PER MIL-R-12934 6500, 6600 SERIES ARE B-LINE™ MODELS, ALUMINUM HOUSING

PRECISION POTENTIOMETERS

WIREWOUND SPECIFICATIONS

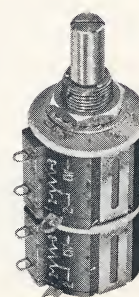
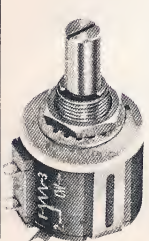
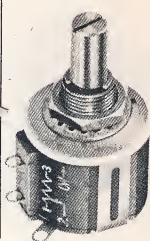
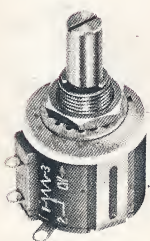
	3400	3500	3509	3510*	3520
Resistances	100Ω-250K 500K	50Ω - 125K, 150K, 200K, 250K, 500K	50Ω to 100K	25Ω - 50K 100K	25Ω - 75K 100K, 250K
Resistance tolerance	±3%	±3%	±5%	±3%	
Linearity, independent	±0.15%	±0.2%	±0.25%	±0.3%	±0.3%
Electrical and mechanical rotation	3600° (+4°/-0°)	3600° (+10°/-0°)	3600° (+10°/-2°)	1080° (+10°/-0°)	1800° (+10°/-0°)
Mechanical life	2,000,000 Rev.	2,000,000 Rev.	1,000,000 Rev.	600,000 Rev.	1,000,000 Rev.
Power	5W at 40°C	2W at 70°C	2W at 25°C	1W at 70°C	1.5W at 70°C
Maximum operating temperature range	-65° to +105°C	-65° to +125°C	-55° to +105°C	-65° to +125°C	-65° to +125°C
Size (dia. x length)	1 13/16" x 1 3/4"	7/8" x 1"	7/8" x 1 1/8"	7/8" x 9/16"	7/8" x 1 1/16"
Maximum ganging	2 cups	2 cups	NA	2 cups	2 cups
Shock	50 Gs	100 Gs	50 Gs	100 Gs	100 Gs
Vibration	10 Gs	20Gs	10 Gs	20 Gs	20 Gs







					CONDUCTIVE PLASTIC SPECIFICATIONS	HYBRID SPECIFICATIONS
3540 7/8" DIA. 10 TURNS	3543 7/8" DIA. 3 TURNS	3545 7/8" DIA. 5 TURNS	3700* 1/2" DIA. 10 TURNS	3707 1/2" DIA. 10 TURNS	3501 7/8" DIA. 10 TURNS	3541 7/8" DIA. 10 TURNS
100Ω - 100KΩ	20Ω - 50K	50Ω - 50K	50Ω - 100K	100Ω - 100K	1K - 500K 1, 2, 4 Meg	1K - 100K
±5%	±5%	±5%	±5%	±5%	±10%	±10%
±0.25%	±0.25%	±0.25%	±0.5%	±1.0%	±0.5%	±0.25%
3600° (+10°/-0°)	1080° (+10°/-0°)	1800° (+10°/-0°)	3600° (+20°/-0°)	3600° (+20°/-0°)	3600° (+10°/-2°)	3600° (+10°/-0°)
1,000,000 Rev.	300,000 Rev.	500,000 Rev.	1,000,000 Rev.	200,000 Rev.	4,000,000 Rev. Minimum	5,000,000 Rev.
2.0W at 70°C	1W at 70°C	1.5W at 70°C	1W at 70°C	1W at 40°C	2W at 70°C	2W at 70°C
-55° to +125°C	-55° to +125°C	-55° to +125°C	-65° to +125°C	-55° to +105°C	-55° to +105°C	-55° to +125°C
7/8" x 3/4"	7/8" x 3/4"	7/8" x 3/4"	1/2" x 1"	1/2" x 1"	7/8" x 1"	7/8" x 3/4"
2 cups	2 cups	2 cups	NA	NA	2 cups	2 cups
50 Gs	50 Gs	50 Gs	100 Gs	50 Gs	100 Gs	50 Gs
15 Gs	15 Gs	15 Gs	20 Gs	10 Gs	20 Gs	15 Gs

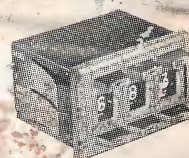


NOBPOT® POTENTIOMETERS

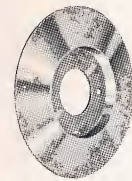
NOBPOT® Model	3600 3/4" DIA., 10-TURN CLOCK FACE READOUT WIREWOUND	3610 7/8" DIA., 10 TURN DIGITAL READOUT WIREWOUND	3640 1 1/4" DIA., 10-TURN CLOCK FACE READOUT WIREWOUND	3650 1 1/4" DIA., 10-TURN DIGITAL READOUT WIREWOUND	3680 1.45 x .93 PUSHBUTTON DIGITAL READOUT CERMET
Resistance (Ohms)	100-100K	100-100K	100-100K	100-100K	1K, 2K, 5K, 10K, 100K, 1 Meg
Tolerance (%)	±5	±5	±3	±3	±1%
Dial Acc. % VR	±0.5	±0.5	±0.1	±0.1	0.5%
Dial Repeatability % VR	±0.1	±0.1	±0.05	±0.05	%
Electrical Rotation	3,600° Nominal	3,600° Nominal	3,600° Nominal	3,600° Nominal	10 Positions Per Decade
Mechanical Life (Rev)	200,000	50,000	200,000	200,000	100,000 Button Operations Per Decade
Watts Power at 25°C	1.5	1.5	2.5	2.5	2.5
Maximum Operating Temp. Range	-65° to +85°	-25° to +85°C	-65° to +85°C	-25° to +85°C	-25° to +85°C
Shock	50 Gs	50 Gs	50 Gs	50 Gs	50 Gs
Vibration	10 Gs	10 Gs	10 Gs	10 Gs	10 Gs
Length FMS	1"	3/4"	1 1/2"	2 9/32"	3.31
Length Overall	1 17/32"	1 9/16"	2 1/32"	2 15/32"	







ACCESSORIES FOR NOBPOT® POTENTIOMETERS

Part Number and Model		H-97 (3640)	H-93 (3600)	H-95 (3600)	H-105 (3640)	H-106 (3640)
	H-361 (3610)	H-103 (3600)	H-99 (3640)	H-98 (3640)	H-107 (3600)	H-108 (3600)
Description	REMOVAL TOOL	PLASTIC SLIP-OVER FRICTION BRAKE	SNAP-ON COLOR RINGS*	STAINLESS STEEL SKIRT	FLAT FACE RECESS MOUNTING BRACKET	BEVELED FACE RECESS MOUNTING BRACKET
						

PRODUCT PHOTOGRAPHS ARE APPROXIMATELY THREE QUARTERS ACTUAL SIZE

* per FED. STD. 595

TURNS-COUNTING DIALS

$\frac{7}{8}$ " KNOB DIAMETER

H-357 SERIES



Part No.	Body Finish	Shaft Diameter (Inches)	Brake
H-357-1	Black	$\frac{1}{4}$	No
H-357-2	Black	$\frac{1}{4}$	Yes

H-490 SERIES 1" DIAMETER

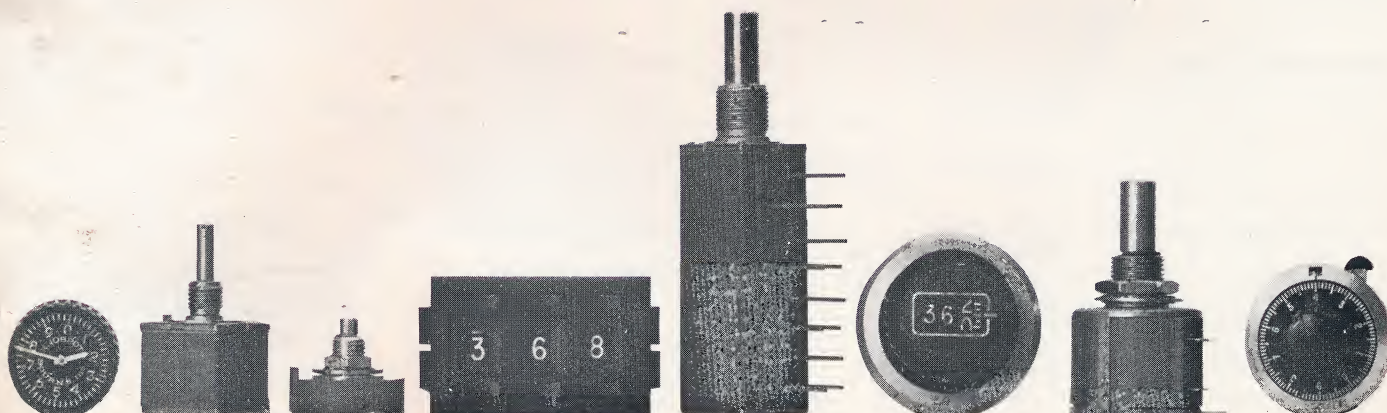


H-491-1	Clear	$\frac{3}{32}$	No
H-492-1	Clear	$\frac{3}{32}$	Yes
H-493-1	Black	$\frac{3}{32}$	No
H-494-1	Black	$\frac{3}{32}$	Yes
H-491-2	Clear	$\frac{1}{8}$	No
H-492-2	Clear	$\frac{1}{8}$	Yes
H-493-2	Black	$\frac{1}{8}$	No
H-494-2	Black	$\frac{1}{8}$	Yes
H-491-3	Clear	$\frac{1}{4}$	No
H-492-3	Clear	$\frac{1}{4}$	Yes
H-493-3	Black	$\frac{1}{4}$	No
H-494-3	Black	$\frac{1}{4}$	Yes

H-510 SERIES $1\frac{3}{8}$ " DIAMETER



H-510-1	Clear	$\frac{1}{8}$	Yes
H-510-2	Clear	$\frac{1}{8}$	Yes



KRIMP-JOINT™ RESISTOR NETWORKS

RELIABLE

Bourns Krimp-Joint™ lead termination design, high-copper alloy leads, and molded plastic package protect you from the prime causes of resistor network failure. Bourns Krimp-Joint leads are firmly crimped onto the network element, and a special reflow resistant solder "cinches" the electrical connection.

ECONOMICAL

Resistor network circuits reduce both assembly costs and board space requirements. All Bourns Krimp-Joint™ Networks are automatically insertable . . . and both our low-profile SIP and our standard DIP packages have the same low .190" off-the-board height.

SPECIFICATIONS

Resistance Tolerances Below 100Ω, ±2%
100Ω to 220KΩ, ±2%

Package Power Ratings (at 25°C)

4114 - 2.0W	4308 - 1.0W
4116 - 2.25W	4310 - 1.25W
4306 - .75W	

Environmental Characteristics per MIL-R-83401 and MIL-STD-202

HOW TO ORDER

Example No. 1 — A 16-pin, 15-resistor DIP network, 22K ohms per resistor is Model 4116R-002-223. The last three digits are the code for the resistance value — the first two digits designate the significant numbers (22), and the last digit gives the number of zeros that follow (3). So, -223 translates to 22,000 ohms.

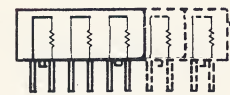
Example No. 2 — An 8-pin, 12-resistor SIP Dual Terminator, with 220 ohms and 330 ohms values would be designated as: Model 4308R-103-221/331.

ISOLATED and BUSSED RESISTOR CIRCUITS

Low Profile SINGLE-IN-LINE Package

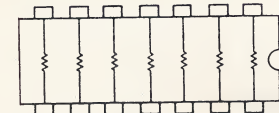


- 6-Pin, 5-Resistors (.2W per Resistor) Model 4306R-101-XXX
- 8-Pin, 7-Resistors (.2W/Resistor) Model 4308R-101-XXX
- 10-Pin, 9-Resistors (.2W/Resistor) Model 4310R-101-XXX

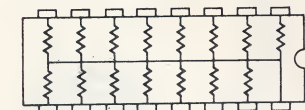


- 6-Pin, 3-Resistors (.3W/Resistor) Model 4306R-102-XXX
- 8-Pin, 4-Resistors (.3W/Resistor) Model 4308R-102-XXX
- 10-Pin, 5-Resistors (.3W/Resistor) Model 4310R-102-XXX

DUAL-IN-LINE Package



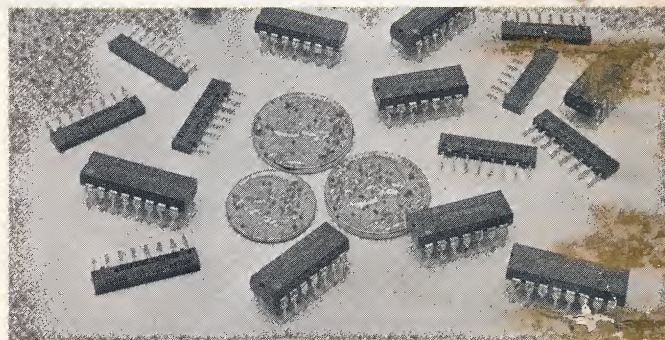
- 14-Pin, 7-Resistors (1/4W/Resistor) Model 4114R-001-XXX
- 16-Pin, 8-Resistors (1/4W/Resistor) Model 4116R-001-XXX



- 14-Pin, 13-Resistors (1/4W/Resistor) Model 4114R-002-XXX
- 16-Pin, 15-Resistors (1/4W/Resistor) Model 4116R-002-XXX

STANDARD RESISTANCE VALUES (ohms)

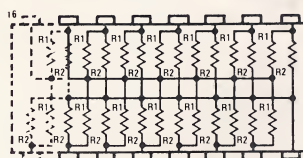
33	68	150	330	680	1500	2700	5600	12000	27000	56000	120000
39	82	180	390	820	1800	3300	6800	15000	33000	68000	150000
47	100	220	470	1000	2000	3900	8200	18000	39000	82000	180000
56	120	270	560	1200	2200	4700	10000	22000	47000	100000	220000



DUAL TERMINATOR CIRCUITS

Low Profile SINGLE-IN-LINE Package

- 8-Pin, 12-Resistors (1/4W/Resistors Pair) Model 4308R-103-XXX/XXX



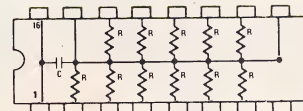
DUAL-IN-LINE PACKAGE

- 14-Pin, 24-Resistors (1/4W/Resistor) Model 4114R-003-XXX/XXX
- 16-Pin, 28-Resistors (1/4W/Resistor) Model 4116R-003-XXX/XXX

STANDARD RESISTANCE VALUES (ohms)

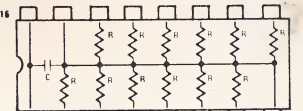
XXX/XXX	R1	R2
221/271	220Ω	270Ω
221/331	220Ω	330Ω
181/391	180Ω	390Ω

ECL TERMINATORS (with .01 mfd. decoupling capacitor)



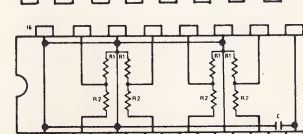
—2.0 VOLT TERMINATORS

Impedance	Model
50Ω	4116C-004-500
68Ω	4116C-004-680
75Ω	4116C-004-750
100Ω	4116C-004-101



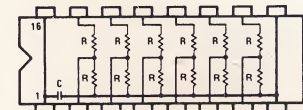
—5.2 VOLT TERMINATOR

Model 4116C-005-511



THEVENIN EQUIVALENT TERMINATORS

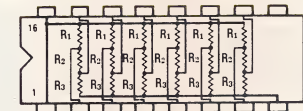
Impedance	Model
50Ω	4116C-006-500
75Ω	4116C-006-750
100Ω	4116C-006-101



SERIES LINE TERMINATORS

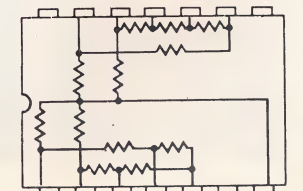
Line Impedance	Model
50Ω	4116C-007-430
75Ω	4116C-007-680
100Ω	4116C-007-930

SPECIAL PURPOSE CIRCUITS



TTL to ECL TRANSLATOR

Model 4116R-008-001

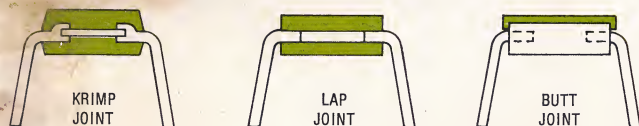


SENSE LINE TERMINATOR for μA 711 DUAL COMPARATOR

Model 4114R-009

WHAT EVERY DESIGNER OR SPECIFIER SHOULD KNOW ABOUT RESISTOR NETWORKS

1. LEAD TERMINATION FAILURE

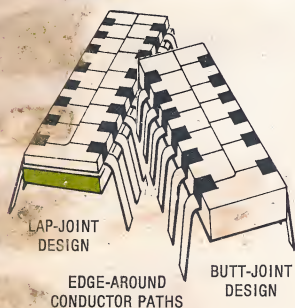


During Bourns initial design program, customer interviews indicated that commonly used "lap joint" and "butt joint" lead termination designs were subject to failure due to weakening of the solder termination during PC board wave soldering operations, and in-circuit heat cycling and vibration. These design-types depend heavily on solder alone for both mechanical and electrical bonding of leads to the substrate.

With this in mind, Bourns engineers developed the "Krimp-Joint™" lead frame termination design to protect customers from this hazard.

Bourns Krimp-Joint leads are firmly crimped onto the network element, much like a vise grasps a piece of lumber. To "cinch" the electrical connection, a special high temperature, reflow resistant solder is also used.

2. KRIMP-JOINT ELIMINATES "EDGE-AROUNDS"



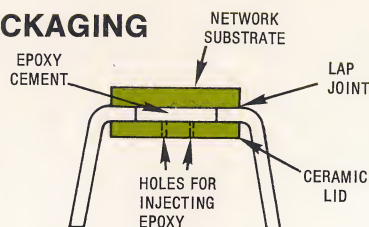
"Edge-around" thick-film printing techniques are required by some designs to electrically connect the network circuit — printed on the horizontal surface face of the substrate — to pin leads which are always "butted" to the edge of the substrate, or are "lap-jointed" to opposite side of the substrate. The latter condition exists with lap-joint designs when more complex thick film circuits are executed which require printing on both sides of the substrate (such as resistor/capacitor networks, dual terminators, special application circuits, etc.). Edge-around printing leaves a natural conductor path weakness on the fine edges of the substrate, resulting in the possibility of a very "tenuous" connection. Such

connections are subject to failure after exposure to heat cycling, shock, vibration, etc., and can result in an open circuit condition. Sometimes an intermittent condition results, which makes fault diagnosis more difficult.

Since most packages are not tested at full rated power during manufacturing QC, weak edge-arounds sometimes pass final tests . . . and then burn-out (like a fuse), when subjected to full power in an operating circuit.

Bourns Krimp-Joint **mechanically** contacts both top and bottom surfaces of the resistor network substrate, resulting in a strong, positive connection between pin lead and both sides of a network circuit. No edge-around paths are required.

3. THE PACKAGING



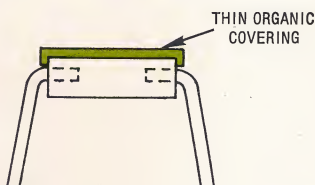
Various types of DIP packaging are utilized of which the molded and "sandwich" types seem most common. One problem that frequently occurs with the sandwich types is delaminating. This happens when air in tiny voids remaining in the epoxy filler (bonds the substrate to the sandwich "lid") expands in hot operating environments to the extent that the package comes apart and fails.

Bourns Krimp-Joint networks are encased in a homogeneous **molded** thermoset plastic package, which is highly heat resistant. All DIP and SIP models are machine insertable and are available in carriers compatible with automatic insertion equipment.

4. POWER

Bourns uses a high-copper alloy lead material to **enhance** power dissipation capacity. Other materials — ferrous and brass alloys — do not have comparable performance. Furthermore, there is potential for rust with the ferrous alloy material. The high-copper alloy costs us more . . . but we think your satisfaction is worth it.

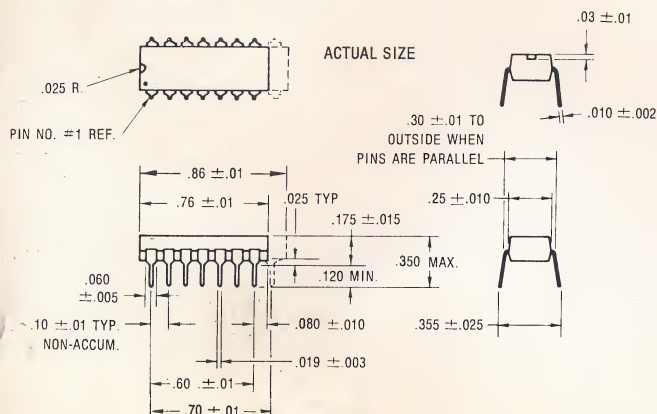
5. A GOOD COAT IS IMPORTANT



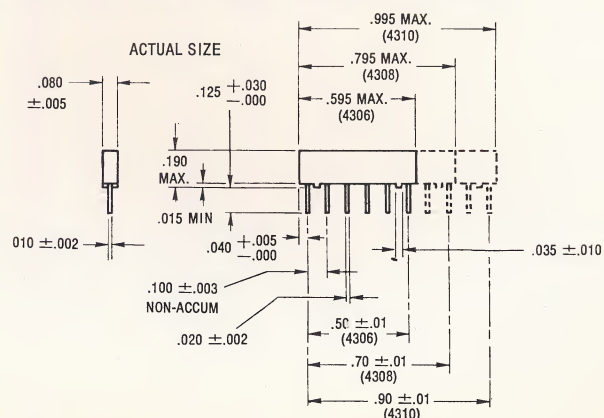
Our little network package must "weather" the homo sapien as well as the electrical environment. Example? Some users report that marking the top of thinly coated networks actually changed internal resistor values. With the tight board spacing found in most equipment cabinets, components occasionally get scraped when boards are inserted and/or removed. Customers report that some thinly protected networks have shorted-out or opened under these conditions. Bourns networks wear a heavy coat of molded plastic to weather the homo sapien climate.

STANDARD PACKAGE DIMENSIONS

14- and 16-Pin DIP Models



6-, 8-, and 10-Pin Low Profile SIP Models





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